CLAIMS:

1. A computer tomography method having the following steps:

a) generation by a beam source (S) of a beam bundle (4) passing through a periodically moving object,

b) generation of a relative movement between the beam source (S) on the one hand and the object on the other hand, which comprises a rotation about an axis of rotation (14),

c) acquisition by means of a detector unit (16), during the relative movement, of measured values that are dependent on the intensity in the beam bundle (4) on the other side of the object, an acquisition time being allocated to each measured value and to the beam causing the respective measured value,

d) detection of a movement signal (21) depending on the movement of the object by means of a movement-detection device (8) and determination of periods ($T_1 \ldots T_7$) of the periodic movement by means of the detected movement signal (21),

e) reconstruction of a computer tomography image of the object from the measured values, wherein only measured values whose acquisition times lie within the periods ($T_1 \ldots T_7$) in time intervals ($\Delta t_1 \ldots \Delta t_7$; $\Delta t'_1 \ldots \Delta t'_7$) are used, which are so determined that a similarity measure applied to intermediate images of a same subregion (23; 25) of the object is minimized, wherein different intermediate images are reconstructed using measured values from time intervals ($\Delta t_1 \ldots \Delta t_7$; $\Delta t'_1 \ldots \Delta t'_7$) from different periods ($T_1 \ldots T_7$).

2. A computer tomography method as claimed in claim 1, characterized in that in step e) initially in each case a time interval ($\Delta t_1 \ldots \Delta t_7$; $\Delta t'_1 \ldots \Delta t'_7$) having a pre-determinable interval width is arranged at a pre-determinable interval position in each period ($T_1 \ldots T_7$), in that each period ($T_1 \ldots T_7$) forms a respective period pair with a chronologically immediately preceding period and a chronologically immediately following period, and in that for each period pair the following steps are carried out:

i) determination of a subregion (23; 25) of the object, which is traversed both by beams whose acquisition instants lie in the time interval (Δt_1; $\Delta t'_1$) of the one period (T_1) and by beams whose acquisition instants lie in the time interval (Δt_2; $\Delta t'_2$) of the other

period (T_2),

ii) generation of a first intermediate image by reconstruction of the subregion (23; 25) exclusively using measured values whose acquisition instants lie in the time interval (Δt_1; $\Delta t'_1$) of the one period (T_1),

iii) generation of a further intermediate image by reconstruction of the subregion (23; 25) exclusively using measured values whose acquisition instants lie in the time interval (Δt_2; $\Delta t'_2$) of the other period (T_2),

iv) determination of a similarity value by applying a similarity measure to the first and the further intermediate image,

v) modifying the interval width and/or the interval position of the time interval (Δt_2; $\Delta t'_2$) of the other period (T_2), and repetition of the steps iii) to v) until a break-off criterion dependent on the similarity value is satisfied.

3. A computer tomography method as claimed in claim 2, characterized in that chronologically consecutive period pairs are taken into consideration in succession in accordance with steps i) to v).

4. A computer tomography method as claimed in claim 2, characterized in that the break-off criterion in step v) leads to a termination if the similarity value falls below a predetermined similarity threshold.

5. A computer tomography method as claimed in claim 1, characterized in that the application of the similarity measure to two intermediate images of the same subregion (23; 25) comprises the following steps:

- division of the subregion (23; 25) into several subdivision regions (voxels),
- subtraction of an image value of a subdivision region from the one intermediate image from an image value of the same subdivision region from the other intermediate image for each subdivision region to form a respective absolute difference,
- summation of the absolute differences, wherein the resulting sum is the similarity value of the similarity measure.

6. A computer tomography method as claimed in claim 1, characterized in that the measured values whose acquisition instants lie in a time interval ($\Delta t_1 \ldots \Delta t_7$; $\Delta t'_1 \ldots \Delta t'_7$) are weighted before the reconstruction of the intermediate images and the CT image,

especially with a weighting that decreases in size the further away from the middle of a time intervals ($\Delta t_1 \ldots \Delta t_7$; $\Delta t'_1 \ldots \Delta t'_7$) the acquisition instant of a measured value lies.

7. A computer tomography method as claimed in claim 1, characterized in that the reconstruction of the intermediate images and/or the CT image is effected with a filtered back-projection.

8. A computer tomography method as claimed in claim 1, characterized in that the intermediate images are reconstructed with a lower spatial resolution than the CT image.

9. A computer tomography method as claimed in claim 1, characterized in that the detected movement signal (21) is an electrocardiogram (21).

10. A computer tomography method as claimed in claim 9, characterized in that a period determined in step d) corresponds to the distance of time between two adjacent R-peaks (27) of the electrocardiogram (21).

11. A computer tomograph for carrying out the method as claimed in claim 1, having

- a beam source (S) for generating a beam bundle (4) passing through a periodically moving object,
- a drive arrangement (2, 5) for generating a relative movement between the beam source (S) on the one hand and the object on the other hand, which comprises a rotation about an axis of rotation (14),
- a detector unit (16) for acquiring measured values that depend on the intensity in the beam bundle (4) on the other side of the object, during the relative movement, wherein an acquisition instant is allocated to each measured value and to the beam causing the respective measured value,
- a movement-detecting device (8), especially an electrocardiograph (8), for detecting periods ($T_1 \ldots T_7$) of the periodic movement by means of a movement signal (21) depending on the movement of the object,
- a reconstruction unit (10) for reconstruction of a computer tomography image of the object from the measured values,
- a control unit (7) for controlling the beam source (S), the drive arrangement

(2, 5), the detector unit (16), the movement-detection device (8) and the reconstruction unit (10) in accordance with the following steps:

a) generation by a beam source (S) of a beam bundle (4) passing through a periodically moving object,

b) generation of a relative movement between the beam source (S) on the one hand and the object on the other hand, which comprises a rotation about an axis of rotation (14),

c) acquisition by means of a detector unit (16), during the relative movement, of measured values that are dependent on the intensity in the beam bundle (4) on the other side of the object, an acquisition time being allocated to each measured value and to the beam causing the respective measured value,

d) detection of a movement signal (21) depending on the movement of the object by means of a movement-detection device (8) and determination of periods ($T_1 \ldots T_7$) of the periodic movement by means of the detected movement signal (21),

e) reconstruction of a computer tomography image of the object from the measured values, wherein only measured values whose acquisition times lie within the periods ($T_1 \ldots T_7$) in time intervals ($\Delta t_1 \ldots \Delta t_7$; $\Delta t'_1 \ldots \Delta t'_7$) are used, which are so determined that a similarity measure applied to intermediate images of a same subregion (23; 25) of the object is minimized, wherein different intermediate images are reconstructed using measured values from time intervals ($\Delta t_1 \ldots \Delta t_7$; $\Delta t'_1 \ldots \Delta t'_7$) from different periods ($T_1 \ldots T_7$).

12. A computer program for a control unit (7) for controlling a beam source (S), a drive device (2, 5), a detector unit (16), a movement-detection device (8) and a reconstruction unit (10) of a computer tomograph for implementing the method as claimed in claim 1.